Serial No.: 10/686,508 **Filed: 10/14/2003**
Office Action Date: 4/21/2005 **Amendment Date: 7/19/2005**

REMARKS/ARGUMENTS

The subject Office Action objected to the disclosure because paragraph [0001] was missing serial number information of a commonly assigned and co-pending patent application. Applicants have addressed this objection with appropriate amendment to the specification herein above. Though not objected to in the Office Action, Applicants have similarly provided missing serial number information in paragraph [0046] with appropriate amendment to the specification herein above. Furthermore, Applicants have corrected a spelling error in paragraph [0051] with appropriate amendment to the specification herein above.

The subject Office Action rejected claims 1-4 and 10-13 under 35 U.S.C. 103(a) as being unpatentable over Loeffler et al [6,154,701] in view of Yamaguchi et al [US 2002/0062183]. The Office Action objected to claims 5, 14 and 15 as being dependent upon a rejected base claim, but indicated their allowability if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Finally, the Office Action allowed claims 6-9.

Applicants gratefully acknowledge the recognition of the patentability and the allowance of claims 6-9.

Regarding the obviousness rejection of claims 1-4 and 10-13, Applicants respectfully traverse the rejections based on the remarks contained herein below.

Loeffler et al discloses evaluating possible operating points for a drivetrain including an engine and transmission and selecting an optimal operating point. The selected optimal operating point is taught to be derived in correspondence with the simultaneous maximization of a target function (G) and minimization of a cost function (L) and represented by $F=G-L \rightarrow max$. The target function (G) is taught to include a transmission output torque reserve term (G_{torque}) and a total drivetrain efficiency term (G_{eta}). The cost function (L) is taught to include toxic emission terms ($L_{emission,i}$) and a noise emission term (L_{noise}). Significantly, therefore, the optimal operating point may correspond to less than maximum total drivetrain efficiency

since G-L may be maximized when total drivetrain efficiencies are not maximized either because a maximum target function G occurs at combinations of G_{torque} and G_{eta} where G_{eta} is not maximized or the simultaneous maximization of a target function G and minimization of a cost function L (i.e. F=G-L→max) occurs at combinations of G_{torque} and G_{eta} where G_{eta} is not maximized. One skilled in the art recognizes that a maximum total drivetrain efficiency term (G_{eta}) corresponds to a minimum aggregate system loss.

Yamaguchi et al discloses a control system for a hybrid vehicle including a battery and motor for driving the wheels of the vehicle. Yamaguchi's teachings are strictly with respect to conventional series or parallel hybrid powertrains as opposed to hybrid powertrains including electrically variable transmissions. Yamaguchi merely teaches establishing the ratio of the fuel consumption rate of a power apparatus (e.g. engine or fuel cell) required to generate an amount of power equal to the required power to drive the vehicle to the power required to drive the vehicle. And, based on the battery SOC, a threshold is established which when compared with the ratio determines whether the power apparatus is fueled to generate power above the required power to drive the vehicle and return the excess power to charge the battery or the power apparatus is fueled to generate power below the required power to drive the vehicle and supplement the power to drive the vehicle by discharging the battery.

The presently amended independent claim 1 comprises determining preferred operating points within the input operating region to minimize an aggregate system loss within the powertrain. Furthermore, Applicants point out that claim 1 is not limited to hybrid powertrains and contains no limitations related thereto including limitations in any way respecting battery usage. Loeffler et al do not teach minimizing an aggregate system loss in determining preferred operating points within the input operating region. Furthermore, Yamaguchi et al teachings are directed toward hybrid vehicles only and therein with respect to operation of the

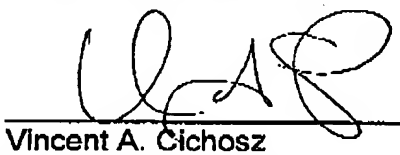
engine or fuel cell to effect a desired battery power flow in accordance with battery SOC.

The presently amended independent claim 10 is directed toward a hybrid powertrain system including an electrically variable transmission. Furthermore, independent claim 10 comprises determining aggregate powertrain system power losses and determining at least one operating region in transmission input speed (Ni), output speed (No) and output torque (To) corresponding to minimum aggregate system power losses wherein Ni within said determined operating region represents preferred input operating points. Loeffler et al and Yamaguchi et al, alone or in combination, do not teach determining at least one operating region in transmission input speed (Ni), output speed (No) and output torque (To) corresponding to minimum aggregate system power losses wherein Ni within said determined operating region represents preferred input operating points.

Based on the above, it is respectfully submitted that the claims 1 and 10 and all claims depending therefrom are allowable over the rejections under 35 U.S. C. 103(a). All pending claims are believed to be in a condition for allowance and Applicants respectfully request that same be allowed to proceed to issue.

If the Examiner has any questions regarding the contents of the present response, he may contact Applicants' attorney at the phone number appearing below.

Respectfully submitted,



Vincent A. Cichosz
Registration No. 35,844
Telephone: (248) 676-2798